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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,255	05/02/2001	Satoshi Kikuchi	207224US0	6560

22850 7590 01/29/2002

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EXAMINER

SCHILLINGER, LAURA M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 01/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/846,255

Applicant(s)

KIKUCHI ET AL

Examiner

Laura M Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 02 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Mehta ('102).

In reference to claim 1, Mehta teaches a method comprising:

Bringing a mixed gas of anhydrous HF gas and a heated inert gas into contact with a substrate surface such that at least a portion of a low-density film is removed without impairing a high density film beyond a tolerance (Abs., Lines: 1-28).

In reference to claim 2, Mehta teaches wherein the high density film is necessary for the substrate and the low density film is not (Col.1, lines: 28-32).

In reference to claim 3, Mehta teaches wherein the low density film has impurities which are removed with the film (Abs., lines:20-28).

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In reference to claim 4, Mehta teaches wherein the mixed gas further comprises steam (Col.2, lines: 50-60).

In reference to claim 5, Mehta teaches wherein the substrate is Si, the high density film is a thermal oxide film and the low density film is a natural oxide film formed on the substrate or an oxide film formed with a chemical solution (Abs., lines: 20-28 and Col.1, lines: 5-32).

In reference to claim 6, Mehta teaches wherein the substrate is for a semiconductor device (Abs., lines: 18-25).

In reference to claim 7, Mehta teaches wherein the high density film is formed on the substrate via a substrate layer (Col.5, lines: 20-40).

In reference to claim 8, Mehta teaches wherein the mixed gas is maintained at a temperature between room temperature and 200 degrees C (Col.4, lines: 5-15).

In reference to claim 9, Mehta teaches wherein the mixed gas is maintained at a temperature between room temperature and 100 degrees C (Col.4, lines: 5-15).

In reference to claim 10, Mehta teaches wherein the surface of the substrate is between 30 and 50 degrees C (Col.4, lines: 10-15).

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In reference to claim 11, Mehta teaches wherein the mixed gas has a flow rate between 40 to 60 L/min (col.4, lines:15-25).

In reference to claim 12, Mehta teaches wherein the concentration of anhydrous HF gas is in the range of 1 vol. % to 3 vol. % (Col.4, lines: 25-30).

In reference to claim 13, Mehta teaches wherein the concentration of anhydrous HF gas is in the range of 1.5 vol. % to 2 vol. % (Col.4, lines: 25-30).

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mehta teaches a similar process ('332), as does Butterbaugh et al ('211 and '495).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (703) 308-6425. The examiner can normally be reached on M-F 7:00 -4:30.

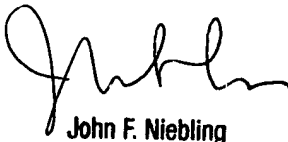
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1500.

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LMS  
January 22, 2002



**John F. Niebling**  
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